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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/725,437	11/29/2000	Farooq Ullah Khan	7-54	9500

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EXAMINER	
QURESHI, AFSAR M	

ART UNIT	PAPER NUMBER
2667	

DATE MAILED: 12/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/725,437	KHAN ET AL.	
	Examiner	Art Unit	
	Afsar M Qureshi	2667	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 May 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-13* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-13* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Response to Amendment

1. REMARKS, received on May 25, 2004, in reference to claims 1-13 are noted.

2. The Examiner noted that Applicant has not addressed the issue of duplicate claims 9 and 10, as pointed out by the Examiner in Office action mailed on March 11, 2004, in his REMARKS. Applicant is requested to make appropriate corrections.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1 and 3-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Subbiah et al. in view of Samir Kallel ['kallel' hereinafter] "SEQUENTIAL DECODING WITH AN EFFICIENT INCREMENTAL REDUNDANCY ARQ SCHEME".

Claim 1 Subbiah et al. teaches attaching a sequence identifier ("sequence number") and a user identifier to sub-packets ("mini packets") (Abstract; column 5, lines 22-37). These sub-packets are inherently transmitted and received. Subbiah et al. ('Sabbiah' hereinafter) fail to specifically disclose sending an "encoder packet identifier" as claimed herein, however, Kallel, in the same field of endeavor, teaches sequential decoding of a repetition convolutional code and **assigning a special sequence metric**

for grouping (see page 1590, § B '*Sequential Decoding of a Repetition Convolutional Code*').

In order to provide a substantial throughput improvement over the partial transmission code combining ARQ scheme as disclosed in the exemplary embodiments of the invention by Subbiah, one of skill in the art, at the time of invention, would be motivated to modify the same utilizing various operations of sequential decoding in conjunction with puncture and repetition codes taught by Kallel.

Claim 3. The cited art does not specifically disclose that the sequence identifier comprises more than one bit for indicating a transmission sequence of the first sub-packet. It would have been obvious to one of ordinary skill in the art to modify the invention of Subbiah so that the sequence number comprises more than one bit because such an arrangement would enable the system to handle long packet sequences.

Claims 4 and 5. Subbiah et al. fails to teach that an encoder packet identifier comprises one bit if the parallel channel encoder packet transmission system has two channels. It would have been obvious to one of ordinary skill in the art to incorporate into the combined invention of Subbiah and Kallel an encoder packet identifier that comprises one bit if the parallel channel encoder packet transmission system has two channels because such an arrangement would enable the channel to be identified by the encoder packet identifier.

4. Claims 2 and 6-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Subbiah and Kallel and further in view of Rathonyi et al. ("Rathonyi" US 6,359,877)

Claim 2. Subbiah and Kallel do not expressly disclose that the sequence identifier comprises one bit for indicating a first transmission or a re-transmission. However, Rathonyi teaches the indication of whether a packet is being transmitted for the first time or re-transmitted (abstract; column 15, lines 41-54). It would have been obvious to one of ordinary skill in the art to modify the combined invention of Subbiah and Kallel so that the sequence identifier comprises one bit for indicating a first transmission or a re-transmission because such an arrangement would be a convenient way to indicate whether a packet is being transmitted for the first time or re-transmitted.

Claims 6 and 7. The cited art of Sabbiah and Kallel fails to teach receiving a NACK from the user identified by the user identifier; attaching a second sequence identifier, the user identifier, and the encoder packet identifier to a new version of the: first sub-packet to produce a new version sub-packet with identifiers, the new version first sub-packet being soft-combinable with the first sub-packet, the second sequence identifier indicating that the new version sub-packet is a retransmission of the first sub-packet; and retransmitting the new version sub-packet with identifiers, as claimed herein. However, Rathonyi teaches receiving a NACK from the user identified by the user identifier Fig. 3D); attaching a second sequence identifier ("sequence number, NS") to a new version of the first sub-packet to produce a new version sub-packet with identifiers (column 10, lines 4-8), the new version first sub-packet being soft-combinable with the

first sub-packet (column 14, lines 22-41). It would have been obvious to one of ordinary skill in the art to incorporate receiving a NACK from the user identified by the user identifier since both inventions are concerned with ARQ scheme and the feedback (see Kallel, page 1591, § V. 'Throughput Analysis'). Such an arrangement would enable the receiver to determine whether the two sub-packets should be soft-combined.

Claim 8 Already discussed in view of Kallel. See rejection of claim 1.

Claims 9 and 10 Subbiah et al. fails to teach that both sub-packets with identifiers are transmitted over different channels. Due to the scope of the invention, Kallel does not expressly disclose that the sub-packets are transmitted over different channels, as claimed herein. However, both Kallel and Subbiah are concerned about transmitting packets of different rates. Inherently, different rate packets are transmitted over different channels, as discussed by Rathonyi (see col. 3, lines 1-61). Transmitting sub-packets, with identifiers, over different channels would allow for reuse of the identifiers.

Claim 11 Subbiah teaches attaching a sequence identifier ("sequence number") and a user identifier to sub-packets ("mini packets") (abstract; column 5, lines 22-37). These sub-packets are inherently transmitted and received. Other limitations, as claimed, are disclosed and discussed in the rejection of claims above, however, Subbiah and Kallel fail to disclose using the user identifier to determine whether the sub-packet is destined for the receiver; and soft combining retransmissions with first transmissions. Rathonyi teaches soft combining of retransmitted sub-packets (abstract; column 14, lines 22-41). Rathonyi teaches that soft combining offers the advantage of increased probability of successful decoding. It would have been obvious to one of

ordinary skill in the art to incorporate, into the teachings of Subbiah and Kallel, using the user identifier to determine whether the sub-packet is destined for the receiver because such an arrangement would prevent the waste of channel capacity that would result from the receiver receiving packets not intended for it. It would have been obvious to one of ordinary skill in the art to use packet identifiers because such an arrangement would enable the receiver to know with which previously transmitted re-transmitted packets should be combined to correct errors. It would have been obvious to one of ordinary skill in the art to modify the invention of Subbiah et al. to include soft-combining, as in Rathonyi et al. because such an arrangement would increase the probability of successful decoding.

Claims 12 and 13. As discussed in the rejection of claims 1 and 11 above, the cited art discloses that the retransmission pattern, different or identical channels, can be selected based on rate compatible repetition codes of decreasing rates, e.g., see Kallel, page 1589, II. BASIC ELEMENTS OF RCC CODES. A motivation to arbitrary selecting channels over the partial retransmission code combining ARQ scheme would be dependent upon achieving maximum throughput.

Response to Arguments

5. Applicant's arguments with respect to claims 1-13 have been considered but are moot in view of the new ground(s) of rejection. The Applicant argued that, in claims 1, 6 and 11, the cited art fails to disclose an "encoder packet identifier" also, combining the previously transmitted packets with currently retransmitted packets (claims 6 and 11).

However, the incremental redundancy ARQ scheme using punctured convolutional coding, by Kallel is in the same field of endeavor and discloses said limitations as discussed in the rejection of claims above.

The claims are broadly interpreted. All those variations in the alternative structure that fall within the scope of this invention can readily be conceived by one of skill in the art. The rational to modify or combine the prior art does not have to be expressly stated in the prior art; the rationale may expressly or impliedly be reasoned from knowledge generally available to one of ordinary skill in the art, established scientific principles or legal precedent established by prior case laws. *In re Fine 837 F.2d 1071, 5USPQ2d 1596 (Fed. Cir. 1988) and Ex Parte Levengood, 28 USPD2d 1300.*

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Afsar M Qureshi whose telephone number is (571) 272 3178. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chi Pham can be reached on (571) 272 3179. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

AFSAR QURESHI
PRIMARY PATENT EXAMINER
December 7, 2004.